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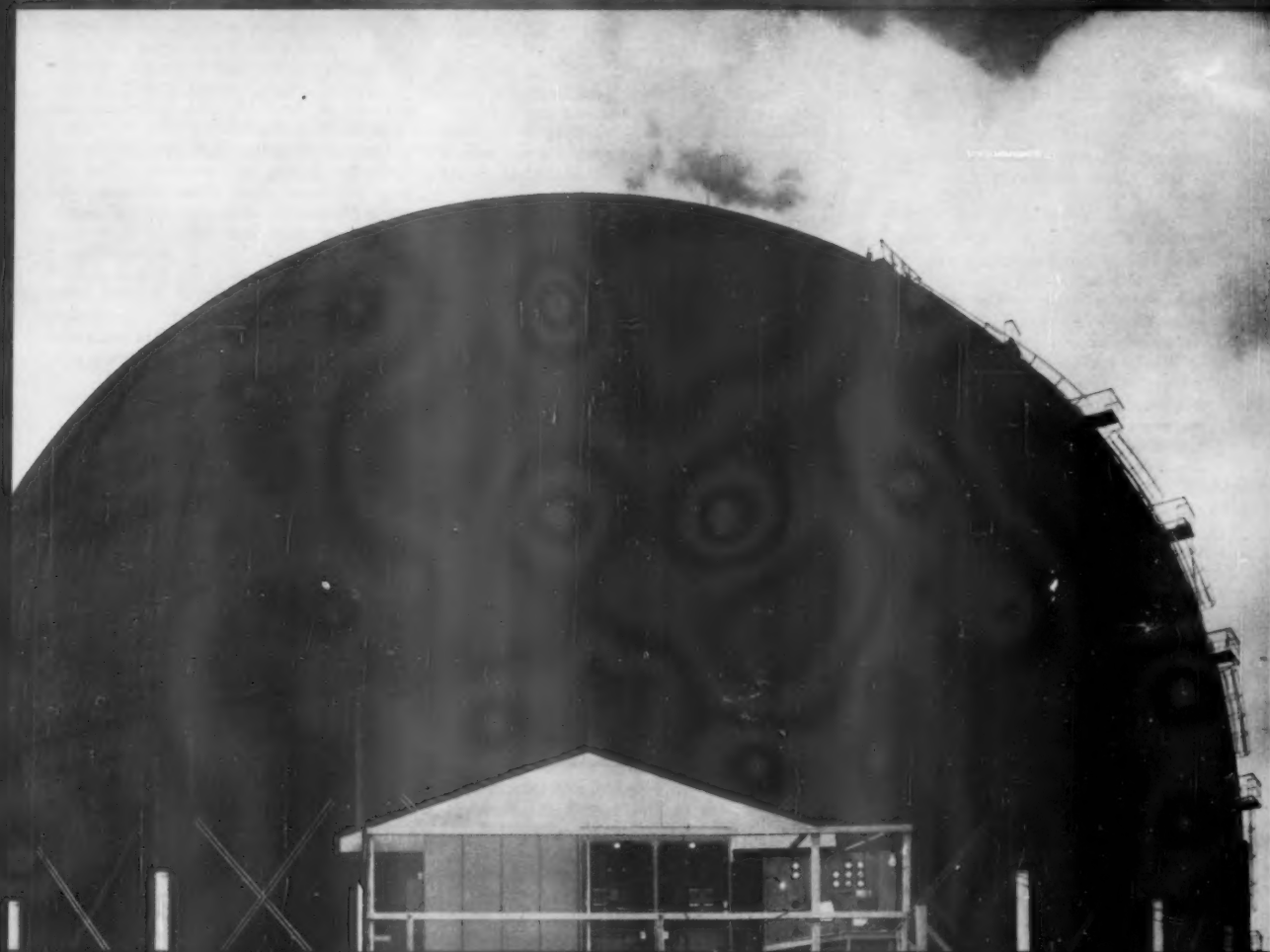
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July 30, 1955

VOL. 28, NO. 31 PAGES 45-65

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Commercial Atomic Power

See Page 73

A SCIENCE SERVICE PUBLICATION

PUBLIC SAFETY

Test Warning Devices

Civil Defense planners are working to perfect an indoor alarm system to warn of impending air attack. Methods using electric power, telephone and radio being tried.

► **EVERY HOME** in the United States may have an indoor alarm system installed in it to warn of an impending air attack.

Civil Defense engineers are trying to perfect an indoor warning system that will compete successfully with dish washers, crying babies and television. Outdoor sirens are effective if heard, but Civil Defense planners fear many people at home often cannot hear the warning wail.

Three indoor warning systems now are being evaluated and tested. They are the use of electric power, telephone or radio. It is hoped one can be perfected to alert persons at home of an impending enemy attack, either immediately or in a few hours.

The most promising system to reach the greatest number of Americans, with equipment on hand, uses electric power. A system based on transmitting signals over electric power transmission lines conceivably might reach 99% of the population in homes with electricity. In addition, an adequate source of power for operating the system exists.

One signal could be sent out to all electric power customers from a relatively small number of power stations.

One use of electric power would work in this manner. A small reed, tuned to go off as an alarm at a predetermined frequency, would be installed in each home.

When an atomic or hydrogen bomb attack is imminent, the power station would change the frequency of power output and the reed would sound the alarm.

Another possibility for warning home dwellers is the telephone. All phones throughout the country could be rung simultaneously for several seconds or a minute. The rings would be in the same code form as outdoor siren wails.

Especially constructed radios for each home offer the added advantage that they can be used both as warning and information devices. Radios operating at 110-volt power would be on at all times, but would not produce sound until the alert signal was given.

They might then be carried to a shelter and tuned to Civil Defense Conelrad stations for details and instructions.

Civil Defense planners are now working on the basis of warning the public of an attack with a one-hour minimum and a maximum of from five to six hours.

Some experts foresee, however, that in ten years time the Russians will have an intercontinental ballistic missile that can be fired at the United States and explode here one-half hour after leaving Russian soil. This would give only a very few minutes' warning time, if any.

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METEOROLOGY

Meteor Dust Causes Rain

► **BILLIONS OF** tiny particles sifting down from the sky may have caused an exceptionally heavy rain in Panama last January, B. H. Cwilong of the research yacht Princess Waimai in the Canal Zone, reported.

Resulting from meteor showers smashing into the earth's atmosphere, appearance of the particles in mid-January confirms the suggestion made by Dr. E. G. Bowen that meteoric dust floating through the earth's atmosphere can cause rain. The meteoric particles, act as nuclei on which raindrops condense.

Mr. Cwilong described in *Nature* (July 16) his discovery of a "very large number of nuclei in Panama on Jan. 13, accompanied by 'prolonged, continuous rain,' abnormal in Panama latitudes at that time of the year.

The nuclei were "unusual" because tests showed they caused moisture condensation at temperatures 15 to 20 degrees Centigrade higher than those of particles usually found in the atmosphere.

He first suspected the strange nuclei resulted from hydrogen bomb explosions, so sent his results privately to several research centers. Mr. Cwilong thus learned of other scientists who had also spotted the great increase in rain-forming nuclei.

The apparent world-wide increase, he says, "agrees strikingly with the dates expected from Dr. Bowen's meteoritic hypothesis and would seem to confirm it."

Dr. Bowen is director of the Radio-physics laboratory of the Commonwealth Scientific and Industrial Research Organization, Sydney, Australia. He suggested early in 1954 that, 29 or 30 days after the earth enters a major meteor stream, if rain falls at all, the chances are extremely good that the rainfall will be heavy.

The Geminid meteor shower occurs from Dec. 10 to 13. Numerous "shooting stars" can be seen on these nights, appearing to radiate from the constellation of Gemini, the twins. About a month is needed for the particles to reach cloud height.

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• RADIO

Saturday, August 6, 1955, 5:00-5:15 p.m. EDT
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Mr. Davis will discuss the forthcoming International Conference on the Peaceful Uses of Atomic Energy to be held in Geneva.

SURGERY

Heart Operation May Help Sufferers

► **A HEART OPERATION** that may prove to be the first successful operation of its kind was reported in the *Journal of American Medical Association* (July 16) by Drs. William Likoff and Charles P. Bailey.

A myocardial aneurysm, which may result when a blood clot blocks a coronary blood vessel, was removed from a 56-year-old man on April 15, 1954, at Hahnemann Hospital, Philadelphia.

The operation meant removal of the sac from the heart's left ventricle. The patient recovered with little difficulty, the doctors reported, and after several weeks was able to walk and climb stairs without shortness of breath, pain or galloping heart beat—all present before the operation.

Long survival for those afflicted with the heart defect is possible, the doctors said, but "extremely unlikely." This successful operation may mean relief for patients now suffering from this type of aneurysm.

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MEDICINE

Babies Can Have Peptic Ulcer, Too

► **WORRIED BUSINESS MEN** are not alone in being subject to peptic, or stomach, ulcers.

Babies can have them, too.

There are about 50,000 undiagnosed cases of gastric ulcer among children between one and six years old, the *Journal of the American Medical Association* (July 16) reported editorially.

Ulcers in babies may be severe, the editorial pointed out; hemorrhage, acute perforation and shock may occur so rapidly that the baby dies before diagnosis can be made or treatment begun.

When an older child has abdominal pain, nausea, vomiting or loss of appetite, the physician should consider the possibility of peptic ulcer. When babies become feeding problems, the same possibility should be investigated.

Although peptic ulcers probably are uncommon in children, the small number of such cases reported is most likely due to the failure of the physician to recognize the condition.

A child's peptic ulcer may be confused with abdominal migraine, food allergy or other intestinal conditions. The pain's location does not help the doctor in his diagnosis, but X-ray findings are useful.

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ATOMS-FOR-PEACE STAMP—This new blue stamp, placed on sale in the nation's capital, commemorates President Eisenhower's proposals to use atomic energy for peaceful purposes.

GENERAL SCIENCE

Atoms-for-Peace Meeting

Second Geneva conference this summer to discuss everything about atoms except bombs. Several thousand experts will be on a 90-hour-per-week schedule for two weeks.

The Geneva Conference on the peaceful atom will be covered by Watson Davis, director of Science Service, and Helen M. Davis, editor of Science Service's Chemistry magazine.

► **THE AGENDA** for this summer's second Geneva conference, devoted to the peaceful atom, shows that almost everything except bombs will be discussed. Power plants, medical uses, food sterilization, fissionable elements and even electricity direct from radiation are on the program.

The atomic meeting will begin Aug. 8 after the "summit" meeting has passed into history. Formally titled United Nations International Conference on the Peaceful Uses of Atomic Energy, the several thousand experts and press will work a 90-hour week for two weeks, that is, 180 hours of actual sessions are scheduled.

Soviet and American experts will talk on the same subject at some of the sessions, the first time in the atomic era that has happened.

While the official U. S. attitude is that the conference is not a contest, competition or debate, nevertheless, on the second day's session, the Russian Nikolayev is scheduled to discuss the first atomic power station in the USSR and Dr. Walter H. Zinn of Argonne National Laboratory, near Chicago, will discuss the American boiling water power reactor.

On the last day of the conference, Dr. Willard F. Libby, Atomic Energy Commissioner, will tell about U.S. international cooperation, while the Russian Lavrishchev will explain Soviet atomic assistance to other nations.

No obvious surprises or releases of secret information are evident in the titles of the 400 papers to be presented orally and the thousand to appear eventually in the printed proceedings.

But there is a chance of some new information being revealed in the discussions that will follow the presentation of formal papers at each of the many sessions. There will undoubtedly be security officers of each country at the elbows of their scientific and industrial representatives.

The barn door may be opened a little wider. The "barn" is the unit of atomic cross-section, a measure of the number of hits that radiation particles make on susceptible material. It got its name because the atom was said to be as big as a barn door.

There has been a lot of secrecy on cross-section of atomic fissionable (power and bomb-making) material, but more information must be known in order to build atomic power plants. The AEC has published several big technical books, but all has not yet been told.

Papers by the Russians Gerasimov, Nikitin, Kukavadse and Vladimirov on cross-sections of fissionable materials will be

eagerly scanned when they are available.

The only actual atomic reactor at the conference will be the American swimming-pool reactor flown there and installed in the Palace of Nations, where the sessions will be held.

Americans undoubtedly look forward to allowing Soviet atomic power experts to sit at the control and brighten the intense blue light in the water's depth as atomic power is produced.

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METEOROLOGY

Hot Weather Predicted For Most of Nation

► **MOST OF** the nation is scheduled for hotter than usual weather until mid-August, long-range forecasters of the U. S. Weather Bureau have predicted.

The only exceptions they foresaw are the Southeast and the Far West, where temperatures are expected to average below normal.

The Central Plains and Great Lakes regions will be especially hotter than normal until mid-August, the weatherman said.

Precipitation is expected to exceed normal in the southeast and northwest sectors of the nation. Below normal amounts are anticipated in a broad zone extending from New England southwestward through the middle Mississippi Valley to the Central Plains. Elsewhere, near normal precipitation is forecast.

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ASTRONOMY

Russian Discovered Bright Comet First

► **THE RUSSIAN** astronomer, A. M. Bakharev of Stalinabad Astronomical Observatory, first discovered the bright comet now in the constellation of Pegasus.

He spotted the object on July 13, one day earlier than astronomers Lewis MacFarlane of Seattle and Karl Krienke of Seattle Pacific College sighted it.

The sixth comet to be found this year, it is now known as 1955F but will later be named after its discoverer. The object is of eighth magnitude, too faint to be seen without good binoculars or a small telescope.

Its position on July 19 was approximately 22 hours, 42 minutes in right ascension and plus 30 degrees in declination, which is in Pegasus, visible low in the northeast in the early evening.

Astronomers from all over the world reported their observations of the comet to Harvard College Observatory, Cambridge, Mass., clearing house for astronomical information in the Western Hemisphere.

The Russian Observatory is located in Stalinabad, the capital of the Tadzhik Soviet Socialist Republic, just north of Afghanistan.

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ARCHAEOLOGY

Lifting Solar Boat Blocks

► WHEN MODERN scientists got their first peek into the stone resting place of the Cheops Solar Boat, a chain of speculation was started.

How, wondered the modern scientists, could the ancient Egyptians, with their limited equipment, have put those 40 20-ton blocks of native limestone on the shelf-like ledges above the boat with air-tight precision?

In speculating over the feats of the ancient Egyptians, the public lost sight of those of the modern Egyptians who removed the great blocks, according to John Dimick, director of the University of Pennsylvania's Egyptian project, who reports them for the first time in *Archaeology* (Summer).

Prof. Abdel Moneim Abubakr headed a committee of Egyptologists and engineers charged with solving questions concerning the boat and its preservation.

If Prof. Abubakr had had at his command a 20-ton motorized crane and had the problem been only that of moving 40 blocks of ordinary limestone, the task would have been simpler, Mr. Dimick said, but he had no such equipment.

Each of the huge blocks was a potential archaeological treasure. Many bear quarry marks, inscriptions, or the marks of ancient Egyptian kings. The ancient paint had become so perilously delicate that it would disappear forever at a touch.

Preparations for moving the blocks were

made only after careful planning and calculations. Mr. Dimick checked the Egyptian tables of engineer M. Salah Osman against American tables of stress and weight.

Limestone weights per cubic meter were 15% greater in the American tables than those given in the Egyptian tables. That resulted in an increased estimated weight per stone of a little more than a ton. The Egyptians, however, had developed lifting equipment with safety allowances ample even for the heavier estimate.

Heavy foundations or sills had been laid along the sides of the boat chamber a few feet from its edge. Using the random-sized timber available, strong scaffolding was built with side bracing and buttresses of lighter materials.

Light-weight rails were salvaged from a track used to cart away debris from the road-building operations. Axles and wheels were taken from an old dirt cart and reassembled under a framework of heavy timbers to make a dolly. Chain hoists were suspended from the dolly.

The rope, the timbers, the chain, the dolly wheels and axles were checked against Mr. Dimick's manuals and found adequate.

Nevertheless, a breathless moment for Prof. Abubakr, Engineer Osman and Mr. Dimick came when the first strain was put on the improvised gear and the huge dead weight hung suspended over the Boat.

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TECHNOLOGY

Built-in Ash Tray

► WHEN A National Bureau of Standards scientist rolled and smoked a cigarette made with a new glass-fiber paper he and his associates developed, he discovered the cigarette had a built-in ash tray.

The paper would not burn, but held the ashes in place until he was ready to throw the cigarette away.

The new paper, made from glass fibers a fifty-thousandth of an inch thick, is also one of the best smoke filters. When used as a cigarette filter, it allowed only one smoke particle in 100,000 to pass through.

Its filtering properties make the paper ideal for gas masks and air conditioners.

In raw form, the paper looks like blotting paper. It has a smooth, almost silky texture and is crease-proof.

The paper is eight times as strong as previous glass papers and is prepared by the same process used to make newsprint. Since acid forms the gelatinous bonding holding the fibers together, the acid concentration must be carefully controlled in the manufacturing process.

Thin glass fibers are very flexible and not easily broken. The very fine threads for the paper are made by forcing molten glass

through tiny holes, then stretching the fibers in hot air.

The new paper is no good as paper. Using it would be like trying to write on a blotter, the scientists pointed out. It was developed by M. J. O'Leary, J. K. Missimer, J. J. Erving and R. B. Hobbs of the National Bureau of Standards for the Naval Research Laboratory.

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PSYCHIATRY

Mental Patient Obeys Commands of Television

► A MENTAL PATIENT with up-to-the-minute symptoms is reported at the Veterans Administration Hospital, Houston, Texas.

The case is that of a young man who calls himself a "television expert." He sits or stands before the television set for hours, imitating closely the performers' gestures and movements.

When commercials come on, he obeys the announcer's instructions literally. When

an announcer says, "Brush your teeth with — toothpaste," he rushes to the bathroom and brushes his teeth. When another announcer commands his audience to use a certain hair tonic, he scoops up water from a nearby fish bowl and sloshes it over his head in imitation of the announcer's movements.

The patient was found to have an old disease, schizophrenia, with modern adaptations of old symptoms known to doctors as "command-automatism and echopraxia."

The case was reported by Dr. Celestine Hay of the VA Hospital and Baylor University College of Medicine in the *American Journal of Psychiatry* (July).

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VETERINARY MEDICINE

Scale Tells Which Calf Will Produce Most Milk

► MEASUREMENTS of young calves' milk glands are good indications of their future milk production, tests over a 25-year period by the U.S. Department of Agriculture have shown. (See p. 76.)

The dairyman rates his calves by feeling their internal milk glands through the udder, and estimating the glands' front to rear measurement. Prior to this rating system's development, dairymen could not determine a cow's abilities until she was producing milk when about two years old.

The system is now undergoing tests on 40 herds in 15 states.

The Agriculture Department's dairy husbandmen reported that Jersey calves in the top third of the mammary-gland scale produced 20% more milk and butterfat when they grew up than those scoring in the bottom third.

Dairymen using the grading system will have to be sure that retardation of mammary-gland growth is not caused by sickness or other remediable conditions. When the calf is cured, her development may come back to normal.

Each year, 6,000,000 cows must be replaced in U.S. herds. Dairy husbandmen estimate that one-third of the replacements are unprofitable producers. The new tests may make cattle replacement more efficient.

Mammary-gland development begins when a calf is about 30 days old, long before puberty.

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PHYSICS

Elements of Universe Five Billion Years Old

► ALL ELEMENTS of the universe were formed about five billion years ago. Based on analysis of meteorites, this age estimate agrees with those made by other means.

Dr. G. J. Wasserburg of the University of Chicago's Institute of Nuclear Studies and Dr. R. J. Hayden of Argonne National Laboratory reported the lower limit of five billion years in *Nature* (July 16).

To estimate elements' age, they measured the amount of radioactive argon 40 present in the Beardsley meteorite.

Earth and the meteorites may have been formed at the same time, they suggested. If this is true, the two scientists pointed out, then all the radioactive elements with half-lives (the time required for half the radioactivity to disappear) considerably shorter than 400,000,000 years would have decayed in the time between the formation of the elements and the earth's appearance. These radioactive elements could not, therefore, contribute to the earth's heating in its early stages.

Drs. Wasserburg and Hayden also examined the Beardsley meteorite for presence of xenon 129 produced by the radioactive decay of iodine 129.

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ANCIENT TUB—This ancient remnant in a farmyard in Sicily's interior, now a family washtub, led Princeton University archaeologists to discover the site of a nameless, 2,500-year-old Greek town. Sometime between the fifth and third centuries B.C., the stone was a sarcophagus.

ARCHAEOLOGY

Greek Town in Sicily

► ARCHAEOLOGIST Erik Sjoqvist of Princeton University discovered remains of a large 80-acre town occupied by Greek colonists from about 600 to 200 years before the birth of Christ.

Clues leading to the discovery were a farmer's wife doing family washing in a "tub" that had once been a Greek stone coffin, and a farmyard wall which its Sicilian farmer owner had braced with a column from an ancient Greek temple.

Prof. Sjoqvist is in Italy directing excavation of the unnamed town, which lies about 125 miles northwest and inland from the coastal city of Syracuse. Because the town was an inland outpost in non-Greek territory, it offers, Prof. Sjoqvist said, "unusual opportunities for studying the interactions between Greek civilization and the indigenous Sicilian culture."

Maps of the site have been made and aerial photographs are being taken. The town was surrounded by a fortification wall, sections of which are still visible above ground. The town's graveyards, situated outside the walls, can also be localized and are at least partially intact.

Digging is proceeding with extreme care. The earth is being carefully sifted and removed in baskets. In some cases, digging is done with tools the size of dentist's instruments.

"Excavations," Prof. Sjoqvist explained, "have actually been the principal means of

reconstructing and reinterpreting the past. Without excavations, archaeology and scholarship in the art, history and language of antiquity will become unproductive, stereotyped and superficial."

Exploration of the ancient town is expected to continue for the next five years. Sharing the expedition's leadership with Prof. Sjoqvist will be Prof. Richard Stillwell, also of Princeton University. They will be assisted by Princeton graduate students and approximately 80 Italian technicians and workmen.

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NUTRITION

Child May Refuse Food Because of Reputation

► IF JUNIOR refuses to eat squash, it may be because he has "a reputation as a squash hater to live up to."

Parents can avoid this situation with regard to squash or any other food by giving children some freedom of choice and not forcing them to eat disliked foods. Sometimes the dislike is temporary and will disappear if parents do not make it an issue.

This advice comes from a government publication, "Nutrition and Healthy Growth." (See p. 76.)

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FORESTRY

Ways To Fight Forest Fires

Advanced electronic gear, water bombs and cloud-seeding techniques are being tested to fight forest fires. One new device, an infrared "eye," detects fires at long range.

By EDWARD HOUSMAN

► NEW DEVICES are about to join the ranger at the nation's forest fire lines to fight blazes that annually consume \$60,000,000 worth of timber.

Television, for instance, is moving to the forests of Louisiana in experiments by the state's forestry service. Remote TV cameras in towers are being built to scan huge woodland areas. The cameras send their pictures through closed circuits to ranger headquarters.

There, one ranger might be able to keep watch over four or five areas at once. Fires can be pinpointed by sighting them from two TV lookouts.

Surplus World War II bombers have been converted in tests to drop about 600 gallons of water from special quick-opening bomb bays. The water cascades down on critical points in a fire and can be dropped in two salvos of 300 gallons each. Smaller planes and helicopters equipped to drop paper bag water bombs are used in Canada's fight on woodland fires.

Further tests with the technique are being considered in this country. The packages, each holding about four gallons, are designed to keep smaller blazes under control until firefighters can reach the scene.

The latest and, according to forest fire experts, the most promising new device is an infrared "eye" fire-spotter.

One thing is sure about a forest fire—it is hot. The new device, developed by the Radio Corporation of America, takes advantage of this fact and spots a blaze by its heat. The system, in initial development stages, is being tested by the U.S. Department of Agriculture in woodlands near Washington, D.C.

"Sees" Through Smoke

The device can "see" through the overcast, fog and smoke that often obscure fires from view.

What you feel when you hold your hand to a fire or near a radiator are heat, or infrared, waves that have properties very similar to visible light, but are invisible. Their frequency is too low to be detected by the eye.

The new device can spot concentrations of infrared radiation from long distances and record their positions on a TV-like screen. The machine "sees" through overcast because infrared waves penetrate the haze.

The principle of the "snooperscope," a tube that converts infrared rays to visible

light, is used in the device. Through such a tube, a man in a dark room detects objects by their heat. Variations of the snooperscope principle have been applied to a rifle attachment called the "sniperscope" used in World War II and Korean War night fighting.

It is reported that a similar system is the "eye" of a new guided missile that heads for the heat-center of its target.

Possible problems in applying the snooperscope to forest-fire fighting are being investigated. Foresters want to know whether the system is sensitive enough to pick up radiation from the hot air column that rises from a fire obscured by trees. They also want to know if the device is too sensitive, if it would set off false alarms by registering heat from rocks baking in the sun, heat from the sun itself or natural hot air currents.

The system may find extensive use in fire detection from the air and, if the system works well, the Agriculture Department expects to encourage development of air-

borne equipment. In a plane, the device could pinpoint a blaze over larger areas, even through the fire's own smoke, which sometimes obscures the blaze.

Other recent advances in scientific fire fighting include:

An incendiary pistol that can be fired from a helicopter or from the ground, with a 100-yard range, to burn away areas in a blaze that the fire has skipped has been developed.

Chemical Retards Bush Fires

Use of chemicals, such as monammonium phosphate, to retard bush fires has shown promise in U.S. Forest Service experiments. Wetted down with this substance, branches will char but will not burst into flame under ordinary conditions. Corrosion of equipment from the chemical, however, is a major limitation of the technique.

Scientists are also engaged in research on the characteristics of blazes and how they are affected by meteorological conditions.

Fires often burn calmly for days, seemingly under control, then suddenly burst into a fiery inferno, almost like an explosion. One explanation is that upper atmospheric layers temporarily damp the fire by preventing its column of hot air from ris-



AIR-BORNE RANGER—Helicopters are used to scout blazes and bring fire fighters to areas difficult to reach by foot. The Wheeler Springs fire shown here ran up damage and suppression costs in excess of \$400,000 before it was brought under control. More than 25,000 acres of national forest and private land in California were burned during it.

ing. When the column pokes through the layer, the fire may blaze up anew.

Atmospheric damping is caused by inversion, or an overhanging layer of warm air above a cooler one. The same phenomenon stagnates smog gases near the earth's surface.

One outgrowth of such research is a cloud-seeding technique to reduce lightning flashes by breaking up the clouds before they can release their stored-up charges. Last year lightning started 7,780 forest fires.

Scientists at the California Department of Natural Resources reported they prevented an estimated 90 lightning fires in their extensive seeding experiments. In each operation, they seeded an average of 2,500 square miles of clouds. Work on the method continues.

Such devices and techniques may help the ranger but will probably not replace him.

Shovel, Ax and Hose

Forestry experts say the best fire fighting device is a man with a shovel, an ax and a hose. Two such men stop 85% of the fires. Another five percent of forest fires need slightly larger crews.

The remaining 10% of the blazes do 90% of the damage. These are the ones that get out of control and sometimes burn for months. In the United States, forest fires flare up at the rate of approximately 500 a day.

One fire that has been burning for months in the Okefinokee Swamp of Georgia is still stubbornly smoldering and flaring up in the peat. When weather conditions are right, it spreads to nearby woodlands. The area is now in its fourth year of drought and experts believe the fire will burn on until the water level rises from a season of heavy rains.

"Mule Tail Fire"

There are several stories of how the fire started. The most widely accepted version has given it the name of "Mule Tail Fire" in Forest Service circles.

It seems a group of men were collecting cups of gum rosin from pine trees, pouring the thick sap into a large barrel on a cart drawn by a mule. It was cold that day and they also had a fire burning in a bucket on the wagon to warm their hands.

Accidentally, the mule swung his tail into the fire. The animal careened off, leaping and kicking. It smashed the cart. The fire from the bucket spread to the rosin, the dry grass and the trees. It went out of control.

The story might not be true, but it has taken hold among fire fighters and is still told.

Most fires have simpler, less picturesque causes. Last year, careless smokers started 23,330 of the 176,891 fires. Trash and brush heap fires caused 30,318. Campers in patrolled woodlands caused 4,785.

The total area destroyed by fire in 1954 was 8,832,963 acres.

Incendiary fires ranked as the top offender. This category includes not only the small number set by firebugs, but those caused by persons on their own property to improve the soil and remove a large variety of pests, such as ticks and snakes. Purposely-started fires caused 40,520 woodland blazes in 1954.

No Aid to Soil

Forest experts point out that it is doubtful whether such burning helps the soil, and that the ticks and snakes return in a short time. At any rate, since incendiary fires are the top cause of woodland blazes, they do more harm than good, and foresters urge farmers to use the utmost care in controlling necessary fires.

Some people purposely start fires to create jobs for themselves.

The number of acres destroyed annually in fire has dropped over the past five years, even though more persons are using the nation's woodlands for recreation than ever before. Much credit for the decrease is given to drives, such as the Smokey Bear fire prevention campaign and the Keep Green programs, which continually remind persons to stamp out their cigarettes, quench their campfires and break matches before throwing them away.

The forest fire season is now upon us and people are warned to be careful in using our valuable woodlands. Ninety percent of the fires are man-caused.

Science News Letter, July 30, 1955



RADIOACTIVE FUNGUS — Ara Paul of Argonne National Laboratory injects the florets of radioactive rye plants with a culture of the fungus, *Claviceps purpurea*. The rye was planted in a sealed greenhouse with radioactive carbon dioxide to make all its products radioactive. Spur-like projections will develop at the injection site.

TECHNOLOGY

Portable Radiation Unit Invented for Field Use

► A PORTABLE radiation unit, for use in the field to induce mutations in plants, has been invented by three scientists from Brookhaven National Laboratory, Upton, N. Y.

Otto A. Kuhl, W. Ralph Singleton and Bernard Manowitz developed the small unit, which uses a cobalt source to expose plants to gamma rays. When not in use, the radioactive cobalt is housed in a one-ton steel and lead shield.

The unit can be produced for about \$5,000, and can be used to cause genetic changes in plants. Some of these changes may be beneficial, creating the hybrid plants of tomorrow.

Science News Letter, July 30, 1955

BIOPHYSICS

Fungus Made Radioactive For Drug Research

► A RADIOACTIVE FORM of a fungus has been developed in "radioactive greenhouses" at the Argonne National Laboratory, Lemont, Ill.

The radioactive fungus ergot, and the drugs ergotamine and ergonovine to be extracted from it, will be used in medical and pharmaceutical research at the University of Connecticut.

Ergot drugs have been used in obstetrics for over a hundred years, and ergotamine is used in treatment of migraine headache. The radioactive forms permit scientists to look for new drugs from the fungus and, at the same time, to trace the action of the drugs on the body's nervous and muscular systems.

Working at the Argonne Laboratory, Ara Paul of the University of Connecticut, grew a variety of rye in sealed greenhouses containing radioactive carbon dioxide. This carbon dioxide was taken up into the rye plants, which in turn became radioactive.

As the plants were about to flower, the drug-producing parasitic fungus ergot, *Claviceps purpurea*, was placed on the rye heads.

The fungus spread quickly and grew on the rye. In one to two months dark-colored, spur-like projections emerged from the colonies. These projections, or sclerotia, are the drug-containing portion of the fungus, which now had become radioactive.

The research project is under the direction of Dr. Norbert J. Scully of the Argonne Laboratory and Dr. Arthur Schwarting of the School of Pharmacy, University of Connecticut.

Besides the ergot, radioactive tobacco, rubber, opium, digitalis, soybean, buckwheat and alfalfa have been developed using Argonne's radioactive greenhouses. The laboratory is operated for the U.S. Atomic Energy Commission by the University of Chicago.

Science News Letter, July 30, 1955

GEOPHYSICS

Scientists Plan Arctic Expeditions

► TWENTY-TWO PARTIES of scientists are packing gear and laying plans for expeditions to the air-conditioned Arctic.

These 1955-56 expeditions bring to more than 180 the number of field projects sponsored by the Arctic Institute of North America in the last 10 years.

A third of the expeditions will be based at the Arctic Research Laboratory of the Office of Naval Research, Point Barrow, Alaska. This is the northernmost laboratory on United States soil.

Others will be scattered throughout Alaska and northern Canada.

The scientists will work on problems ranging from the nature of radio waves from outer space to the kinds of insects that populated Alaska 60,000,000 years ago.

Robert L. Usinger, entomologist at the University of California, will look near Point Barrow for amber deposits from the Cretaceous Age, 60,000,000 years in the dim past. Amber occasionally contains fossilized insects so well preserved they may be studied in nearly as much detail as modern ones.

The oldest amber-preserved insects now known are a mere million years old. Finds of insects in amber from the Cretaceous Age could advance knowledge of insects greatly.

To learn more about radio transmission disturbances, C. T. Elvey, director of the Geophysical Institute, College, Alaska, will record the relative strength of radio waves from outer space, trying to correlate them with radio blackouts. (See SNL, July 2, p. 3.)

In Canada, scientists will study the bird life of the MacKenzie District, the marine vegetation of Ungava Bay and the biology of Arctic coast waters.

Albert M. Day, former director of the U.S. Fish and Wildlife Service, will study the programs and policies of agencies affecting the breeding, protection and perpetuation of migratory waterfowl in North America, in a two-year survey for the Arctic Institute.

The Arctic Institute's 22 projects will be supported by the Office of Naval Research, the Sir Frederick Banting Fund and private contributors.

Science News Letter, July 30, 1955

PSYCHOLOGY

Failure Is "Bad Habit" That Can Be Broken

► PSYCHOTHERAPISTS can treat failure as a "bad habit," replaced as easily as other habits, Dr. Gerald Pascal, visiting professor of psychology at the University of California at Los Angeles, has found.

"We have learned from experiments with rats and mice that habits can be replaced by other habits through a re-learning process," he said. "The same general

principles can be applied clinically to human beings."

As an example, Dr. Pascal cites the case of a new mother who was failing to carry out her motherhood responsibilities. Analysis of the situation revealed she had a strong father attachment and was markedly hostile toward her mother. Therefore she unconsciously rejected motherhood.

Through a sympathetic approach, the psychotherapist was able to project himself in the role of a father figure. With his guidance, the woman became in her mind a little girl again and was able to relearn and to develop new attitudes toward the role of wife and mother.

These new attitudes bred confidence, and successful performance as a wife and mother strengthened the confidence. Eventually habits of failure were replaced by habits of success.

Science News Letter, July 30, 1955

INVENTION

Oil and Water Filter Is Aid to Motorists

► MOTORISTS can expect better engine performance from a combined oil filter and water filter now patented.

The combination conditioner, a single unit, employs two filters having a common base. The water filter jackets the oil filter and, in cold weather, acts as warmer for the lubricating oil. For repairs or changes, either filter can be removed without disturbing the other.

Invented by William S. James of Birmingham, Mich., the two-filter unit was awarded patent No. 2,713,422. Mr. James assigned the patent rights to the Fram Corporation of Rhode Island.

Science News Letter, July 30, 1955

AERONAUTICS

Turboprops Begin Service in U. S.

► THE COMMERCIAL jet age began in the United States on July 26 with the first scheduled airline flight of a British Viscount turboprop powered plane.

The turboprop engine is not really a jet. The jet blast stays mostly inside the engine and its thrust is used to turn the plane's propellers. Capital Airlines has ordered 60 of the aircraft, built by Vickers-Armstrong, Ltd. and powered by four Rolls Royce Dart engines.

The plane is said to give a smoother and quieter ride, and has proved popular in airline service abroad.

The Viscount's popularity has led the way to development of other turboprop liners in the United States and elsewhere. The Bristol Britannia, larger than the Viscount, is now undergoing tests in England and is scheduled to be introduced into airline use next year. The Dutch Fokker, smaller than the Viscount, is also under development.

Science News Letter, July 30, 1955

IN SCIENCE

TECHNOLOGY

Tiny Battery Gives Power for Two Years

► A BUTTON-SIZED battery that can deliver electricity at constant voltage continuously for two years has been developed.

The "micro-cell" was designed by the Elgin National Watch Company, Elgin, Ill., to power an electric wrist watch now under development, but the battery could also run such devices as a photoflash unit, a hearing aid, a miniature dictating machine or a portable radio.

Using the element indium, a soft and silvery metal, for the battery's anode eliminates the gassing and leakage that normally plagues other miniature cells.

The new battery, a half circle that occupies the volume of a penny, has 25% more capacity than any other comparable sealed cell yet developed, the manufacturer said. It reliably delivers a constant 1.15 volts for two years.

Science News Letter, July 30, 1955

TECHNOLOGY

Vanishing Germanium Sought in Waste Study

► TRAPPING THE rare element germanium, which could be used for electronic transistors if it did not vanish up smokestacks of coal-fired power plants, is being studied at the Fuel Research Station at Greenwich, near London.

Fifty parts per million of germanium is found when coal is burned in the laboratory, where all the products of combustion are recovered. Only three parts per million of germanium, on the average, is in the ash of similar coal from commercial boilers.

Dr. K. V. Aubrey of the Greenwich research station, trying to find the lost parts, discovered more germanium in boiler deposits on steam-generating tubes than had previously been thought was there.

High velocity of waste gases shooting up the smokestack may carry much of the lost germanium along as fine dust rather than as a volatile product that will later condense on a nearby cool surface.

Part of the loss may actually be more apparent than real, Dr. Aubrey suggested. He found more fly-ash may be collected from one power plant than another, giving a smaller proportion of germanium metal in comparison to the total ash amount.

The continuing hunt for the escaping germanium and the best way of capturing the elusive element is reported in *Nature* (July 16).

Germanium occurs in coal because the plants that millions of years ago formed the coal absorbed it from the soil.

Science News Letter, July 30, 1955

CE FIELDS

ENTOMOLOGY

Chinch Bugs Strike At Nation's Corn Crop

► THE CHINCH BUG, one of the most completely destructive insects to corn in out-break stages, is moving from small grains to corn in several northern areas, while corn fields in the South already show infestation.

In Pennsylvania, Nebraska and Kansas, chinch bugs have been leaving their early feeding grounds of wheat, rye and other small grains to strike at maturing fields of corn and sorghum, the U.S. Department of Agriculture reported. The migration is completed in many areas.

South Carolina counties have chinch bug infestation ranging from "common" to "extremely numerous," and there are scattered areas with the insect pest in Missouri. Lawns and large sodded areas are under chinch bug attack in Mississippi.

The striking black and white chinch bug, *Blissus leucopterus*, feeds by sucking the juices of grass family plants, including corn and sorghum, which they may devastate in short order.

Adults winter over in clumps of bunch grass, emerging in spring when they fly to fields of small grains in the north, or directly to corn and sorghum in warmer areas. Once in cultivated plants, they mate and lay eggs on plant leaves or in soil. One female may lay 200 eggs within three to four weeks.

After the eggs hatch, the young chinch bugs feed on the plants and, if in small grain, migrate into corn and sorghum fields when the grain begins to ripen. A second generation is usually produced later in the summer.

Science News Letter, July 30, 1955

TECHNOLOGY

Gyroscope and Fins Stop Ship's Rolling

► ENGINEERS HAVE found a way to stop ships from rolling on the high seas, the best cure for seasickness.

A gyroscope mechanism stops the pitching and tossing. It can eliminate moderate roll completely and stop up to 90% of the severest tossing, according to the Sperry Gyroscope Company, Great Neck, N.Y., where the instrument was developed.

Heart of the system is a small gyroscope, a delicate top that keeps spinning on the same axis no matter which way it is moved. The gyroscope is linked by power drives to underwater fins, one on each side of the hull.

In operation, as soon as a ship starts rolling in one direction, the gyroscope senses the motion. A series of anti-roll signals are

sent to hydraulic actuators, changing the angle of the fins at the boat's side.

The system can be worked automatically and continuously, or the fins can be folded back into the hull during the time the ship is docked.

For merchant vessels, each of the two underwater fins can create 3,000 foot-tons of anti-rolling force within two seconds. The whole apparatus weighs 95 tons, and uses about 80 horsepower to operate the fins, the electronic calculator and the hydraulic "muscles."

On a typical ship, the fins would be seven feet wide and reach out 14 feet from the hull. They have the same general shape as airplane wings.

The balancing system, known as the Sperry Gyrofin Ship Stabilizer, will also be able to reduce much of the cargo damage caused by heavy seas.

Science News Letter, July 30, 1955

PSYCHOLOGY

To Help Others, Understand Self

► PARENTS and others trying to help a crippled child or anyone at any age who is handicapped physically or emotionally need to understand themselves. They must know their own attitudes and feelings toward the handicapped they are trying to help.

Self-understanding is crucial in helping toward the healthy rehabilitation of others, Dr. William S. Menninger of Topeka, Kans., said in a report to the *Crippled Child* (April), publication of the National Society for Crippled Children and Adults.

Citing the enormous strides made in helping the crippled scientifically in physical rehabilitation, Dr. Menninger said that all too often psychological rehabilitation is "hit or miss."

"Despite some superficial differences between us, we are all basically alike," he pointed out, "with the unconscious part of us, the well-spring of our strongest emotions . . . and with the body and mind as inseparable parts of each one of us."

In the scientific approach to emotional rehabilitation, Dr. Menninger said, "general precepts are not enough . . . each individual patient's emotional needs must be studied and ministered to scientifically."

At the same time, he said, it must be backed with objective evaluation by parents and professional workers of their emotional relationships with the patient.

An examination of some of the unhealthy attitudes which handicap parents and workers in their efforts to help the crippled and a view of the crippled person's own feelings turn an effective searchlight into the inner make-up of everyone who wishes to attain emotional maturity.

"A deep faith in the job" and "development of positive aspects of personality" are among the needs mentioned by Dr. Menninger for achieving the maturity necessary for working with the crippled.

Science News Letter, July 30, 1955

PHYSICS

Atomic Energy Used To Generate Electricity

See Front Cover

► FROM A huge black balloon designed never to leave the ground, atomic energy has begun to repay the debt of energy so far fed into nuclear installations by public and private power generators of the nation.

Ordinary electric current surged outward over the power line in use since 1951 to feed power to General Electric Company's Knolls Atomic Power Laboratory, West Milton, N. Y., but on July 18 the atomic energy generated by GE's experimental reactor fed current back to the Niagara Mohawk Power Corporation.

Members of the Atomic Energy Commission, the U.S. Navy, the two companies and guests saw Adm. Lewis Strauss, chairman of the AEC, throw a switch turning atomic power to peaceful instead of military use, symbolizing a new milestone in development of power from the atom.

Inside the great balloon, shown on the cover of this week's SCIENCE NEWS LETTER, is the reactor that was the experimental laboratory for General Electric's development of the power plant for the submarine USS Sea Wolf, launched July 21.

The experimental work is now completed, and the reactor will spend its old age furnishing electricity for the power network of nearby communities. Enough experience has been accumulated in the 13 years since the first fission chain reaction so that major hazards can be insured against.

The black balloon is itself a form of insurance. Completely enclosing the reactor, it would imprison radioactive products in the unlikely event the reactor should explode.

Science News Letter, July 30, 1955

INVENTION

Patent Way to Make Pulp From Hardwood

► TWO SYRACUSE UNIVERSITY professors have invented a method for producing groundwood pulp from hardwood. Profs. Clarence E. Libby and Frederic W. O'Neil of the New York State College of Forestry were awarded patent No. 2,713,540 for a chemical-mechanical process they claim has not previously been used to make pulp.

"The pulps produced by our process are so distinctive that we have found it desirable to give them their own names," the scientists said.

They call the product from their single cycle process "chemigroundwood," and the product of their double cycle process "dichemigroundwood." Hardwoods from poplar to beech, birch and maple can be treated by varying the chemo-mechanical process.

The Syracuse researchers assigned their pulping process patent rights to the New York State College of Forestry at Syracuse, N. Y.

Science News Letter, July 30, 1955

ASTRONOMY

Vega Shines Overhead

The five first magnitude stars visible these midsummer evenings are Vega, Deneb, Altair, Arcturus and Antares. Perseid meteor shower gives a reliable "shooting star" display.

By JAMES STOKLEY

➤ **SHINING DIRECTLY OVERHEAD** on midsummer evenings is the summer night's brightest star—Vega, in Lyra, the lyre.

It is only one of five bright stars, each of first magnitude, shown on the accompanying maps. These depict the sky as it appears about 10 p.m., your own kind of standard time, at the beginning of August, or an hour earlier at the middle of the month.

Just below Vega, toward the east, is the figure of Cygnus, the swan. The most familiar stars in this group form a cross, and at the head, toward the northern horizon, is the bright Deneb.

As shown, part of Cygnus is on the northern sky map and part on the southern. It is underneath the latter section, high in the south, that we find our next star of the first magnitude, Altair, in Aquila, the eagle. One way to identify this orb is that it is attended by two fainter stars, one of which is above and the other below.

Polaris Seen in North

Turning our attention to the northwest, we see the familiar great dipper, part of Ursa Major, the great bear. In dipper's bowl are the well-known pointers, whose direction guides us to Polaris. This is the pole star, in Ursa Minor, the little bear, and also the little dipper.

Seen from the North Pole of the earth, Polaris is nearly overhead, so that is why we always see it in the north and can use it as a guide at night.

The handle of the great dipper also serves as a kind of pointer, for if we follow its curved line, we come to Arcturus, another of our first magnitude stars, in Bootes, the bear-driver. The last of the five bright stars referred to is Antares, in Scorpio, the scorpion, low in the southwest.

Just to the right of this group is Libra, the scales, in which is the only planet now easily visible. This is Saturn, readily identified because it is brighter than any of the nearby stars, and also because it shines with a steadier light.

Around the middle of August it will be possible to see one of the most reliable of the meteor showers which, at various times of the year, bombard us with "shooting stars."

Of course a "shooting," or, as it is sometimes called, a "falling," star is not really a star at all. The stars are huge globes of gas like the sun, and far larger than the earth, trillions of miles away. But a falling star, correctly called a meteor, is a bit of cosmic

dust, generally no larger than a pinhead, which enters the earth's atmosphere at high speed.

The friction it encounters slows its motion, and its energy is converted into heat, so that it is quickly burned up and makes the flash of light we see.

This happens at a height of some 50 to 70 miles above the ground. Therefore, unless it is directly overhead, a typical meteor one sees flashing across the sky may be 100 to 150 miles away.

At first it may seem hard to understand how a particle no larger than a grain of sand, perhaps, can produce light that may be seen for such a distance. Astronomers, too, found it difficult as long as they thought that the light came merely from the solid particle, heated to incandescence by friction with the air. However, it now appears that not more than one percent of the light originates with the nucleus itself.

What seems to happen is that heat turns the solid particle into a gas cloud, which is

still moving at high speed. As it does so, the gas atoms hit atoms in the atmosphere and are knocked apart.

Some electrons that ordinarily revolve around the atomic nuclei are removed from their usual positions. As they fall back into place, they emit light.

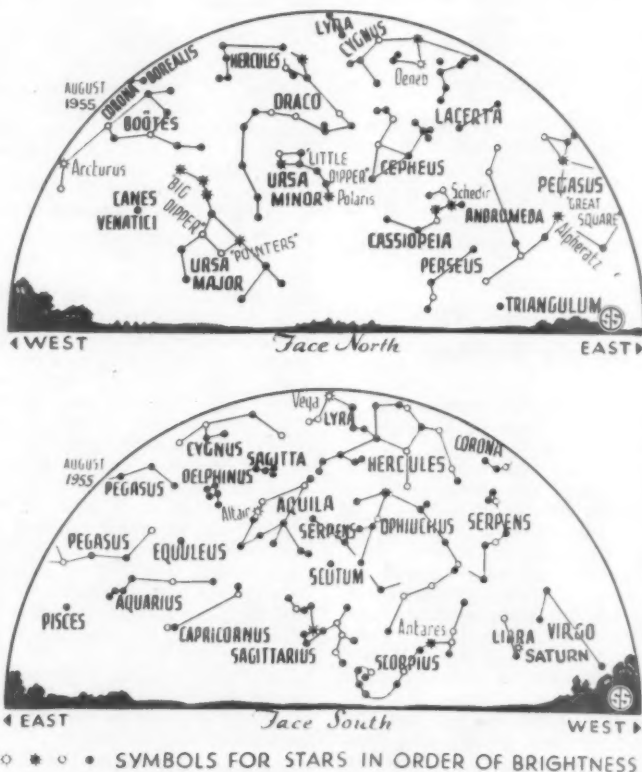
More Seen After Midnight

On any clear dark night, several meteors may be seen every hour. There are more after midnight than before, because then we meet them head-on.

From sunset to midnight we are on the rear of the earth as it moves in its orbit, and any that reach us then have to catch up to us.

In August, especially about the 12th and 13th, many more will be visible, perhaps up to 50 an hour. If you watch carefully, you will see that the bulk of them seem to be coming from a point in the northeastern sky, in the constellation of Perseus, shown on our map close to the horizon.

Actually, the meteoric particles are moving through space in a huge swarm, following the path of a comet seen in 1862, so they are believed to be the remains of that



comets. When the particles are burned up in our atmosphere, the tracks are parallel, but they seem to converge in the distance, in the direction from which they appear to have come.

This is the same effect of perspective that makes a railroad's parallel tracks seem to converge in the distance. In the same fashion, the meteors seem to radiate from Perseus and so they are called the Perseid meteors.

Unlike some of the other meteor showers, which come at other times of year, the Perseids are rather constant in number, but the brightness of the sky determines how brilliantly the shower can be seen.

This year the moon is at last quarter on Aug. 10, a few days before the shower, and rises about midnight. Thus, it will be in the sky at the time of night when the meteors are most numerous, but will not interfere as much as if it were full.

Anyone who stays up late, on either the

12th or the 13th, and watches the northeastern sky, should be able to see a number of these meteors.

Celestial Time Table for August

Aug. EST	
3 2:30 p.m.	Full moon.
4 1:00 p.m.	Jupiter on opposite side of sun from earth.
5 12:00 noon	Mercury on opposite side of sun from earth.
10 9:33 p.m.	Moon in last quarter.
12 during night	Perseid meteors
14 1:00 p.m.	Moon nearest, distance 227,400 miles.
16 10:00 p.m.	Mars on opposite side of sun from earth.
17 2:58 p.m.	New moon.
23 11:09 p.m.	Moon passes Saturn.
25 3:51 a.m.	Moon in first quarter.
26 10:00 a.m.	Moon farthest, distance 251,200 miles.

Subtract one hour for CST, two hours for MST, and three for PST.

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PUBLIC HEALTH

A-Bomb Test Danger Low

► DANGER to the public from tests of atomic weapons in Nevada has been reduced to a minimum, an Atomic Energy Commission scientist said.

How the AEC cooperated with public health services and civil defense groups to protect the public is reported in the *Journal of the American Medical Association* (July 16) by Dr. Gordon M. Dunning, of AEC's division of biology and medicine.

Chief measure for protecting the public was the original selection of the Nevada site for atomic tests. The site covers 600 square miles, with an adjacent U.S. Air Force gunnery range of 4,000 square miles. These tracts are surrounded by wide expanses of sparsely populated land. Aerial and surface surveys insure that no persons or animals wander into the area.

Theoretical dangers from test explosions include three effects, Dr. Dunning explained, from searing light, from blast and from various radiations.

Looking directly at a fireball from nearby or through binoculars at greater distances would damage eyes. Military personnel and others viewing the shots are urged to protect their eyes with high density protective glasses.

Four Eye Injuries

Only four military persons have suffered eye injuries. In three cases, the damage was superficial. A few observers on nearby mountains who did not wear dark glasses have reported temporary blind spots.

To protect motorists who might be startled by the bright flash, traffic is halted on nearby highways in line of sight five minutes before the blast. Aircraft travel is restricted for 30 minutes before and after the shot over a circle 130 miles in diameter.

No cases of injury to humans have been reported from the blast of atomic tests.

Shock waves are of two kinds. One travels parallel to the earth's surface, and may be felt up to 6 miles from the site of the explosion. They may be strong enough to break windows or cause minor damage to buildings. A total of \$44,300 has been allowed for claims for such blast damage, Dr. Dunning revealed.

Reflected Shock Waves

Other shock waves are reflected from the ozone layer of the upper atmosphere. Such reflected waves may reach 60 to 150 miles from the test site. They may be strong enough to be heard distinctly, but have not resulted in any known damage to buildings.

AEC officials constantly check atmospheric radiation levels, both near the test site and over the United States. Ninety Weather Bureau stations throughout the country collect fallout data, as do ten AEC installations.

As part of the radiation monitoring system, instruments have been set up in 30 communities around the test site as far as 160 miles away. They are connected to commercial telephone wires. An operator sitting at a control point can place a normal telephone call, receiving signals that can be translated in seconds into gamma radiation dose rates.

No cases have been reported of humans receiving radiation burns, off the test site, Dr. Dunning said. However, in 1952, some cows 15 to 20 miles from "ground zero" were burned and, in 1953, some horses were burned.

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To produce better pine trees, a hypodermic needle filled with pollen from a selected "father" tree is injected into the bag-covered flowers of an outstanding "mother" tree.

ENTOMOLOGY

Panamanian Bees Make Wax From Oil

► A RACE of Panamanian bees, *Trigona pallida*, uses oil to make the wax of their honeycombs.

The bees get the oil from a bucket of black crude oil used for mosquito control in Panama.

They are inhabitants of the jungle island of Barro Colorado where the Smithsonian Institution's tropical research center is located, are stingless and produce a honey that ranges from "excellent" to "nauseating," the Institution reported. Quality of the honey varies with the flowers they feed on.

They build no nests of their own, but take up squatter's rights in those of ants and termites.

The bees apparently see primarily by ultraviolet light, invisible to most animals including humans. Specimens confined in a box with several windows, each illuminated by a different light band, tried to escape toward the ultraviolet.

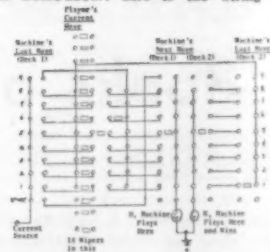
Science News Letter, July 30, 1955

The fulmar, a grey and white sea-bird of northern oceans, spits out an oily fluid at intruders approaching its nest.

Experiment #26 with GENIAC, the first electrical brain construction kit

THE PROBLEM is to set up a machine which will tit-tat-toe with a human player assuming the machine plays first.

THE SOLUTION: here is the wiring diagram.



The first electrical brain construction kit not only plays tit-tat-toe but you can build thirty three other semi-automatic computers which display intelligent behavior, run on only one flashlight battery and require no soldering.

GENIACs are simple enough for intelligent boys and girls to put together yet interesting to any one because they demonstrate in easily constructed models a fascinating variety of computing and reasoning circuits.

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PHYSICS

New H-Bomb Trigger?

► **BABY HYDROGEN BOMBS** exploded without a triggering A-bomb are foreseen from the report of a possible new method, using shock waves, for setting off H-bombs.

Dr. G. O. Jones, professor of physics at Queen Mary College of the University of London, made this suggestion.

For several years there has been speculation on the possibility of a method other than an atomic bomb for detonating the hydrogen, or fusion, bomb.

Originally it was thought that only an atomic, or fission, bomb could produce the extremely high heat required to trigger the H-bomb.

Shock waves might generate "such high temperatures," Prof. Jones said, that they could be used to set off H-bombs.

Shock waves are increasing in importance as the inter-continental ballistic missile era approaches. The sharp sound heard when a jet passes through the sound barrier is due to the shock wave.

Explosions as well as the extremely rapid motion of airplanes or guided missiles can cause shock waves.

Using shock waves to set off hydrogen bombs might allow building a baby hydrogen bomb. It could be exploded without using up precious fissionable uranium 235 or plutonium.

With the new triggering method, the H-bomb could be made very little or very big as desired. The A-bomb must have a minimum mass, probably about 50 pounds, to be set off in an uncontrolled chain reaction.

Hydrogen bombs without an accompanying A-bomb would not be detected by Geiger counters or other radiation detecting

devices, since they would not release the tell-tale radiation until exploded.

The light elements of the hydrogen bomb, generally thought to be deuterium, tritium or lithium, are widely available. Any nation, big or small, could make baby H-bombs after solving the detonation problem.

Pressure Discontinuities

They occur, Dr. Jones explained, when matter at one pressure passes through matter at a very different pressure. "Sharp pressure discontinuities" are thus formed, generating high temperatures.

Scientists use a simple device known as a shock tube to make shock waves in the laboratory, where they can be studied under controlled conditions. They generate a shock wave by puncturing a diaphragm separating regions of high and low pressure.

"For a pressure ratio of about 500, in the most favorable case," Prof. Jones reported in *Discovery* (July), "a velocity corresponding to Mach 20 (that is, 20 times the velocity of sound) should be reached, and in argon this would be expected to give a temperature of about 16,000 degrees—which is sufficient to cause appreciable ionization.

"Velocities at least up to Mach 34 have actually been reached experimentally in shock tubes."

Prof. Jones said that, at present, "one of the most promising approaches for the generation of very high temperatures seems to be to cause shock waves to overtake or collide with each other, or to meet some other barrier."

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AMPHIPODA COLLECTED AT THE ARCTIC LABORATORY, OFFICE OF NAVAL RESEARCH, POINT BARROW, ALASKA, by G. E. MACGINNIE—Clarence R. Shoemaker—*Smithsonian*, 78 p., illus., paper, 75 cents. The tiny sea creatures reported here include 100 species, of which nine are new.

CLINICAL BIOCHEMISTRY—Abraham Cantarow and Max Trumper—*Saunders*, 5th ed., 738 p., illus., \$9.00. Virtually completely rewritten.

EDUCATORS GUIDE TO FREE FILMS—Mary Foley Horkheimer and John W. Diffor, Eds.—*Educators Progress Service*, 15th ed., 591 p., paper, \$6.00. Listing 3,069 titles of films, of which 732 were not listed in the previous edition.

ELEMENTS OF ZOOLOGY—Tracy I. Storer and Robert L. Usinger—*McGraw-Hill*, 552 p., illus., \$5.50. A text for an elementary college course, especially when it is limited to one semester.

EVALUATION OF MAMMARY-GLAND DEVELOPMENT IN HOLSTEIN AND JERSEY CALVES AS A

MEASURE OF POTENTIAL PRODUCING CAPACITY—W. W. Swett, J. H. Book, C. A. Matthews and M. H. Fohrman—*Govt. Printing Office*, USDA Technical Bulletin No. 1111, 44 p., illus., paper, 25 cents. External appearance of the udder was found to be deceptive, but the gland development inside, which could be felt with the fingers, was found to be significant. (See p. 69.)

HOSPITALIZATION OF MENTAL PATIENTS: A Survey of Existing Legislation—*World Health Organization*, (Columbia University Press) 100 p., paper, \$1.25. The existing legislation of most countries is still inspired by the principles that underlay laws enacted during the nineteenth century.

MICROWAVE SPECTROSCOPY—C. H. Townes and A. L. Schawlow—*McGraw-Hill*, 698 p., illus., \$12.50. Concerned primarily with a relatively new field, the microwave spectroscopy of gases.

MONEY MANAGEMENT: Children's Spending—Leone Ann Heuer—*Household Finance Corp.*,

31 p., illus., paper, 10 cents. Hints on helping young children learn how to use money wisely.

MONTEZUMA CASTLE ARCHAEOLOGY: Part I, Excavations and Conclusions by Earl Jackson and Material Culture by Sallie Pierce Van Valkenburgh with Appendix, Crania From Montezuma Castle and Montezuma Well, by Katherine Bartlett—*Southwestern Monuments Association*, Technical Series, Vol. 3, Part 1, 62 p., illus., paper, \$3.00. Reporting what was found in the excavation of a cliff dwelling in Arizona.

MONTEZUMA CASTLE ARCHAEOLOGY: Part II, Textiles—Kate Peck Kent—*Southwestern Monuments Association*, Technical Series, Vol. 3, Part 2, 102 p., illus., paper, \$2.00. Description of the textiles, sandals, matting, garments and cords found in the excavation of a cliff dwelling in Arizona occupied for some time prior to 1425 A.D.

OBSERVED AND COMPUTED SETTLEMENTS OF STRUCTURES IN CHICAGO—Ralph B. Peck and Mehmet Ensar Uyanik—*University of Illinois Engineering Experiment Station*, Bulletin No. 429, 60 p., illus., paper, 90 cents. Reporting results of a comparison between observed and computed settlements for seven structures in the central business district.

NUTRITION AND HEALTHY GROWTH—Children's Bureau—*Govt. Printing Office*, 35 p., paper, 20 cents. How to tell whether your child is well nourished and how to keep him that way. (See p. 69.)

PROVERBS FOR PLEASURE: Uncommon Sayings Collected, Arranged and Annotated—H. Pullar-Strecker—*Philosophical Library*, 202 p., \$6.00. A book, intended, not for reference, but for enjoyable reading. Proverbs are arranged by subject and wherever possible the nationality is given.

QUANTUM MECHANICS—Leonard I. Schiff—*McGraw-Hill*, 2d ed., 417 p., illus., \$6.50. To explain the physical concepts of quantum mechanics, to describe the mathematical methods involved, and to present illustrative examples of both the ideas and the methods is this book's triple purpose.

REPORT OF THE COMMITTEE ON THE MEASUREMENT OF GEOLOGIC TIME 1953-1954—John Putnam Marble, Chairman—*National Academy of Sciences-National Research Council*, Publication 333, 193 p., mimeographed, paper, \$1.75. Includes an analysis of the various methods for measuring geologic time.

A REVISION OF THE CHIGGERS OF THE SUBGENUS GAHLIRIPIA (ACARINA: TROMBICULIDAE)—Robert Traub and Mary Lou Morrow—*Smithsonian*, 89 p., illus., paper, \$1.00.

THE SCIENCE BOOK OF THE HUMAN BODY—Edith E. Sproul—*Pocket Books*, 232 p., illus., paper, 35 cents. Intended to give the mature adult a better understanding of physiology and anatomy, and of what his own body is and can do.

STATE ACCREDITATION OF HIGH SCHOOLS: Practices and Standards of State Agencies—Grace S. Wright—*Govt. Printing Office*, Office of Education, Bulletin 1955, No. 5, 81 p., paper, 30 cents. This study is intended to make it possible for all states more easily to examine their standards and accreditation practices in the light of what other states are doing.

Five species of *birds*, called dippers, habitually feed on the bottoms of swift mountain streams and literally "fly" under water.

A deceased donor's *eyes*, used for corneal transplants, must be removed within three hours of the donor's death.

PUBLIC HEALTH

How Gland Fever Spreads

Kissing found means of spreading glandular fever, or infectious mononucleosis, which chiefly attacks college students and others of ages 17 to 25.

► INTIMATE KISSING is the answer to a hitherto unsolved medical riddle, in the opinion of Col. Robert J. Hoagland, chief of the medical service at the U.S. Army Hospital, Heidelberg, Germany.

The riddle is how infectious mononucleosis spreads. This disease, discovered in 1889, was formerly called glandular fever. Sore throat, fever, swollen glands especially in the neck, and enlarged spleen are the chief symptoms of the disease. Its cause is unknown but believed to be a virus. It is called mononucleosis because the blood contains an abnormally large number of white cells with only one nucleus.

College students and others of ages 17 to 25 are those chiefly attacked by this ailment. This, Col. Hoagland said, should long ago have given a clue to how the disease spreads.

Almost without exception, acute contagious diseases that are not venereal are most frequent in children, gradually decreasing with increasing age.

Col. Hoagland has seen over 200 cases of mononucleosis since 1946, but rarely in a person over 30 and never in a child under 14, even with cooperation of alert pediatricians.

Attacks in children and epidemics of the disease have been reported in the past. In Col. Hoagland's opinion and that of some other scientists, however, these were probably another disease with similar symptoms. In these cases, with rare exceptions, the diagnosis was not confirmed by a blood test, developed in 1932 and called the sheep cell, or heterophile, test.

During six years when stationed at the U.S. Military Academy, West Point, N.Y., Col. Hoagland saw all cases of infectious mononucleosis. A puzzling feature, noted also by doctors at colleges, was that roommates, who easily caught colds, 'flu and the like from each other, never got infectious mononucleosis.

Medical students and young nurses are frequently attacked, but the disease does not run through a ward as would a cold from such sources.

At West Point Col. Hoagland was able to rule out transmission by food, water, insects and sexual relations.

As college and university doctors had, he noticed that cases developed a month or so after vacation.

The break that gave him the riddle's solution came with a patient who got sick one day early in February. The man said that the previous Dec. 23 he spent about 12 hours on a train in the company of a female medical student whom he had not seen before or since. They kissed frequently and, Col. Hoagland reported, "more important,

in a way to allow mingling of saliva. They also carelessly drank from the mouth of a bottle passed around in a circle of train acquaintances."

Col. Hoagland's patient learned by letter that his female companion had gone to the hospital with infectious mononucleosis a few days before he did. Either both got the disease by drinking from the same bottle or, Col. Hoagland surmised, the woman got it in mouth contact with someone else on the train and passed it to his patient.

Since that case, in February, 1951, Col. Hoagland has obtained a history of mouth contact 32 to 49 days before onset of symptoms from all but one of 50 patients with mononucleosis. The one exception was a chaplain's assistant who said he frequently drank soft drinks from bottles passed to him by friends.

The theory of spread by intimate kissing explains, Col. Hoagland said, why mononucleosis is rarely seen in married persons. Unmarried persons are much more likely to kiss promiscuously, he said.

His new theory is reported in the *American Journal of Medical Sciences* (March).

Science News Letter, July 30, 1955

ARCHAEOLOGY

Find Tools of Ape-Man

► FOR THE first time, the bones of an African ape-man, a human-like creature believed by some scientists to be man's ancestor, have been found associated with hand-made stone tools that may be 600,000 to 1,000,000 years old.

The discovery was announced in *Nature* (July 23) by Dr. Raymond A. Dart of the Medical School of the University of the Witwatersrand, Africa. Dr. Dart is famous as discoverer of the skull of a child-like infant ape, the first of the African ape-man finds.

Presence of the australopithecine teeth in the bed of pebble tools indicates, Dr. Dart reported, the ape-man was living at the time these earliest tools were in use and may have manufactured them.

The new find of ape-man bone fragments consists of a badly damaged and mutilated piece of an upper jaw bone, with parts of two molar teeth in place. The size of the teeth and a characteristic groove along the tongue side of one prong of the triple root make them clearly identifiable as belonging to the primitive ape-man known to scientists as *Australopithecus*, Dr. Dart reported.

The roots of the teeth, he explained,

ENTOMOLOGY

Insecticides Control Water-Bred Mosquitoes

► CONTROLLING OF mosquitoes that breed in irrigation water appears close at hand through use of water-soluble insecticides, the U.S. Department of Agriculture reported.

After testing 141 insecticides, scientists found five that are effective against mosquito larvae when greatly diluted with water, as an insecticide would have to be in an irrigation system.

These five were Bayer L 13/59, Shell OS 2046, para-oxon, parathion and methyl parathion.

Shell OS 2046 and Bayer L 13/59 hold the most promise of the five, the USDA scientists found. One gallon of OS 2046 or four gallons of L 13/59 will make a million gallons of flowing irrigation water deadly to mosquito larvae. Both are water soluble.

Because they will resist washing off vegetation, insecticides not water soluble are normally preferred for agricultural pest control. But when these insecticides are added to irrigation water in an attempt to control mosquitoes, they become suspended and eventually settle to the bottom, where they have little effect on the larvae.

Field experiments on water-soluble insecticides are being carried out this summer in irrigated rice fields in Arkansas and in irrigated pastures in California, under the direction of entomologist J. B. Gahan of the USDA's Agricultural Research Service.

Science News Letter, July 30, 1955

YOUR SKIN AND ITS CARE

By H. T. Behrman, M.D., and O. L. Levin, M.D.

Two dermatologists give you the up-to-date scientific facts. They tell you in detail exactly what to do to beautify and improve your skin, how to avoid or correct skin disorders, and how to deal with many skin problems as: Daily care of the face—acne—cosmetics—pimples—blackheads—acne—whiteheads—cysts—boils—dry skin—dry skin—chapping—poison ivy—cold sores—hives—superficial hair—ringworm—piles—birthmarks—scars—warts—tumors—skin cancer—excessive sweating—etc.

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EMBRYOLOGY

Rabbits Become Foster Mothers of Sheep

► **THREE BRITISH SCIENTISTS** have succeeded in making rabbits temporary mothers of sheep.

Eggs from pregnant sheep have been transferred into female rabbits where they continued to develop normally for at least five days, R. L. W. Averill, C. E. Adams and L. E. A. Rowson of the Agricultural Research Council, Cambridge, England, reported in *Nature* (July 23).

While normal cleavage of the transferred sheep eggs continued in the uterus and Fallopian tubes of the rabbit foster mothers, rabbit eggs in the same organs failed to show development.

Successful transfer of mammalian eggs from one species to another is not necessarily tied to the animals' ability to breed, as had been generally thought, the scientists concluded.

For the experiment, they removed 18 eggs, in the two-cell through the 12-cell stages of development, from sheep and transferred them to the Fallopian tubes of pregnant rabbits. Four to five days later, they dissected the rabbits and found nine of the sheep eggs attached to the uterus or Fallopian tube walls, all with normal development.

Two of the sheep eggs from rabbits were retransferred into a female sheep. Sixteen days later, she was dissected and two normal embryos were found.

Two immediate practical uses for the discovery, the scientists said, were:

1. They hope to use their technique as a test of viability of sheep eggs in the earliest stages;
2. Rabbits may now serve as "incubators" for the long-distance transport of fertilized sheep eggs.

Science News Letter, July 30, 1955

INVENTION

Pocket Recorder Receives Patent

► **INTERVIEWS** on the spot can be recorded with a pocket-sized wire recorder requiring no outside power source.

The portable recorder, invented by Louis A. McNabb of Davenport, Iowa, measures one and three-quarters by four and one-quarter by seven inches.

The device weighs only two and one-half pounds.

The small recorder is powered by two dry cells and two miniature "B" batteries. Mr. McNabb claimed that his recorder eliminates "wows" as well as the "Donald Duck" sound of reversed speech when the wire is being rewound.

In addition to other devices on the pocket recorder, Mr. McNabb has provided a used and unused wire indicator and a breakage detector.

The pocket recorder was awarded patent No. 2,713,618.

Science News Letter, July 30, 1955

MAMMOLOGY

NATURE RAMBLINGS

by Horace Loftin



Tropical Cats in America

► **LOOKING LIKE** an overgrown, speckled tabby cat, a 20-pound ocelot, such as the one shown in the illustration, recently was stalking the parks of the nation's capital after wandering away from a pet shop. The tropical import was hardly made to feel at home, however.

Hounds and hunters gave him no rest. Or rather, the ocelot gave them no rest, for he was hunted night and day.

Other tropical cats, taken to wandering, have used the United States as a temporary home or even established themselves here permanently. The southwestern states, bordering on Mexico, have four exotic big cats—ocelots, jaguars, margays, and jaguarundis or eyras. Their wanderings have been surveyed by Naturalist Raymond J. Hock in the *American Midland Naturalist* (April).

Biggest and most ferocious of the exotic cats in the United States is the jaguar, *Felis onca*, the famed "tigre" of South America. He is also the best known and most widely distributed of them. The jaguar ranges over parts of Texas, Arizona and New Mexico, and there are several reports of his presence in California.

The last jaguar killed in California, way back in 1860, was attacking an Indian dressed up in mule deer antlers and skin when he was felled.

The ocelot, *Felis pardalis*, smaller cousin of the jaguar, seems to be an occasional visitor across the line from Mexico. He is found in the extreme southern section of Texas and rarely in Arizona. When fully grown, he is about 50 to 55 inches long, including about 18 inches of handsome tail.

Generally, this nocturnal cat lives in forests and thick vegetation. He makes his meals off small mammals and birds—including the farmer's hens when he can get to them.

The jaguarundi and the margay are less often seen. In fact, the elusive Texas margay, *Felis wiedii cooperi*, has only been taken one time, back in the last century. However, this small cat probably makes his permanent home in northeastern Mexico.

The jaguarundi, *Felis yaguarondi*, is a slender cat with an otter-like body and a small head. His tail is about as long as his sleek four-foot body. While he ranges southward as far as Argentina and Paraguay, the race that invades the United States only gets into the border country of Texas and more rarely into Arizona.

While these tropical cats are mainly "wet-backs," sneaking into the United States from Mexico, this country is well represented with native specimens of the family.

Largest and probably most widely scattered of the native cats is the mountain lion, or cougar, *Felis concolor*. The old bobcat and the Canadian lynx add to the big cat representation in this country.

Often, a big domestic Tom gone back to nature sets up a "wildcat" scare in a farm neighborhood. These can have mighty sharp claws and teeth, and the wise man treats them as "wild cats," too.

Science News Letter, July 30, 1955

GENETICS

Radiation Increases World Death Rate

► **BETWEEN** 2,000 and 300,000 more deaths per generation are caused by worldwide radiation effects of A-bombs and H-bombs upon human heredity.

This new and pessimistic calculation by Prof. J. B. S. Haldane of University College's department of biometry, London, appeared in *Nature* (July 16).

Radiation effects on the future of the human race are judged by Prof. Haldane to be about ten times more serious than suggested by Sir John Cockcroft, Britain's top atomic expert.

Prof. Haldane, one of the world leaders in statistics dealing with human factors, argues that the radiation dose needed to double human mutation rates is little more than three roentgens per generation, compared with 50 roentgens used by Sir John and 80 roentgens used by Prof. H. J. Muller, American geneticist-Nobel laureate of Indiana University (see SNL, May 7, p. 291).

Because more than half the world's humans work outdoors and many, as in India, live in flimsy houses, the protection of houses against radiation has been overrated, in Prof. Haldane's opinion.

The effect of widely spread products of atomic explosions is a very complex problem, he pointed out. Estimates of effects on humans are largely based on mutations, or changes, in heredity germ plasma that show up in fruit flies and in mice. Prof. Haldane suggested validating the reasoning from mice to men by experiments on tissue cultures of mice and men.

Radiation effects show up by transferring deaths from ages later than usual for parenthood to ages before it.

The radiation death toll discussed is not that which would occur in an atomic explosion used in war, but the effect on future heredity of such radiation spread over the world by test bombs.

Science News Letter, July 30, 1955

PUBLIC HEALTH

How Good is Vaccine?

The sure test of polio vaccination results will be found in figures for incidence in 1957, by which time health authorities can definitely attribute low polio levels to the vaccine.

► THE 1957 polio figures are the ones to watch for results of polio vaccinations begun this year.

If the vaccination program continues with more and more children getting the vaccine, and if there are three low polio seasons in succession, health authorities will then feel sure the reduced number of cases can be attributed to the vaccine.

Even though the number of cases is reduced in 1955, it will not be possible to say whether this is primarily due to vaccinations nor will it be possible to say how much of the reduction in cases is due to vaccinations.

Polio cases are running lower this year than for the corresponding periods for the last three years. They are not however, lower than in 1950 and 1951, according to reports to the Public Health Service.

If cases have been as few in previous years without vaccinations as this year with vaccinations, the low figures this year can hardly be attributed to the vaccinations.

A reduction of 58% in polio cases took

place between 1946 and 1947, and there was about a 40% reduction between 1952 and 1953, health authorities in Washington pointed out.

That big a reduction is not likely this year for the following reasons:

1. Of the 9,000,000 school children supposed to get vaccinations this year, only 6,000,000 may actually get two or three shots. Some of those will not get protection from the shots, since the vaccine is not 100% effective.
2. Ten percent of all polio cases in any year are among first and second grade children. But for the above reasons (no vaccination or no protection from it in some cases), 10% reduction in cases for the population as a whole cannot be expected this year.

The reduction in cases among the population as a whole may therefore be only six or seven percent. Many times that reduction has occurred without any vaccination.

These figures do not mean that the vaccination has not done some good. They

show, however, that the figures reported this year will not tell the whole story of the results of vaccination for polio the country over.

Next year's figures will give a better picture, and the third year with vaccination every year should really tell the story.

Science News Letter, July 30, 1955

ARCHAEOLOGY

Fossil Find Links Ancient North and South America

► FOSSILS OF higher animal life from 45,000,000 years ago have been uncovered for the first time in central Mexico.

They are the first link in the chain of back-boned animal life from the "dawn era" between North and South America.

Fossil remains of an iguana, a rat-like animal, and a tapir-like animal in "dawn era" deposits, dating from the late Eocene and early Oligocene eras, of Guanajuato, Mexico, were discovered by Carl Fries Jr. of the U. S. Geological Survey. Collections were made later by Dr. D. S. Dunkle of the U. S. National Museum.

The Great Plains and Rocky Mountain regions of the United States are rich in fossils from this era. Until this discovery, however, the record was a blank southward through Mexico and Central America, the Smithsonian Institution reported. The trail of dawn age vertebrates picked up again in Colombia.

The finds in Mexico thus tend to bridge a geographical gap that may be of great importance in piecing together the prehistory of the Western Hemisphere. From a practical point of view, the Smithsonian Institution said, the discovery may aid in interpreting ore deposits.

Mr. Fries, Dr. Dunkle and Dr. Claude W. Hibbard described the fossils.

Science News Letter, July 30, 1955



ATLANTIC RADAR WARNING—Two ocean tugs tow the 6,000-ton "Texas towers" that will become the first of a series of offshore radar stations in the United States continental defense system. Tugs of Moran Towing & Transportation Co., Inc. are shown moving the structure out of Boston harbor on its way to permanent location at George's Bank, 100-odd miles off the New England coast.

Questions

ARCHAEOLOGY—Why were the big blocks covering the Cheops Solar Boat valuable? p. 68.

☐ ☐ ☐

ENTOMOLOGY—What insecticides are effecting in controlling mosquitoes bred in irrigation waters? p. 77.

☐ ☐ ☐

FORESTRY—What new weapons are being used to fight forest fires? p. 70.

☐ ☐ ☐

PHYSICS—What are shock waves? p. 72.
When was atomic energy first used to generate commercial electricity in the U. S.? p. 73.

☐ ☐ ☐

PUBLIC HEALTH—How is mononucleosis spread? p. 77.

☐ ☐ ☐

Photographs: Cover, General Electric Company; p. 67, U. S. Post Office; p. 69, Princeton University; p. 70, U. S. Forest Service; p. 71, Argonne National Laboratory; p. 79, Moran Towing & Transportation Co., Inc.; p. 80, Tricolor.

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 789. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

⚙️ **TRANSISTOR PHONOGRAPH** is truly portable, operating on four self-contained flashlight batteries instead of depending on exterior power sources as earlier "portables" did. The new record player is the first in which tiny transistors replace all vacuum tubes. Surprisingly small and compact, the phonograph is promised to stores by early fall.

Science News Letter, July 30, 1955

⚙️ **PORTABLE IRRIGATOR** has glass-cloth and plastic construction to make it strong, light and flexible. The new watering system, which can be moved about easily, carries water to farmers' crops without ditches or expensive metal pipes.

Science News Letter, July 30, 1955

⚙️ **CONTOURED SCRAPER** aids do-it-yourself addicts in preparing carved moldings, picture frames and furniture for refinishing. The new scraper has a hand-fitting handle and six interchangeable steel blades, each shaped for removing paint, lacquer or varnish from many difficult places.

Science News Letter, July 30, 1955

⚙️ **HIGHWAY FLARE**, such as those used by truck drivers, has been designed so that it fits compactly into a passenger car's glove compartment. Useful when your car



stalls or must be repaired at the side of the road, the warning device consists of a flag and two red headlight reflectors on a small stand, as shown in the photograph.

Science News Letter, July 30, 1955

⚙️ **HAND-LESS WATCH** has a small window in which the correct time may be

read directly, without need of hour and minute hands. Numbers indicating the time glide into a small opening in the metal cover of the watch face. Distribution is expected in September.

Science News Letter, July 30, 1955

⚙️ **SKATE WHEELS**, made of a composition based on man-made rubber, give better traction, preventing slips and skids even when the rink floor is not powdered. The new wheels reduce rolling noise 75%, and may be bought as replacement wheels or as standard equipment on several new lines of skates.

Science News Letter, July 30, 1955

⚙️ **UNUSUAL GLASS** exteriors for buildings will soon be available through use of new glass panels in custom colors and textures specified by the building's architect. Trade marks and insignia can be incorporated in the panels. During manufacture, a heat process is used to strengthen the glass and to fuse permanent ceramic color into it.

Science News Letter, July 30, 1955

⚙️ **"AUTOMATIC" CAMERA**, for 3-D photography, boasts a single window that is a range-finder and view-finder combined. A bubble leveler shows when the camera is even. This aluminum-cased camera links shutter and diaphragm so that when the photographer chooses one, the other is automatically specified by the exposure dial.

Science News Letter, July 30, 1955

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Do You Know?

Modern machines can plant 1,000 seedling trees in an hour.

Fighting planes of the United States military services were refueled in the air on an average of every 3½ minutes during 1954.

Scientists are developing strains of corn better able to resist one of this crop's worst enemies, the European corn borer.

Human cancer cells cultured in laboratory flasks have been destroyed by serum from a horse.

Over most of the United States during August and September, the most common cause of hay fever will be the pollen of either giant or short ragweed.

More than 2,250,000 acres in 16 states were treated by aircraft in 1954 in Federal-State cooperative programs for control of agriculture pests.